LABORATORY CHEMICAL FUME HOOD INSPECTION

DATE OF PREVIOUS INSPECTION | DATE

THIS INSPECTION PERFORMED BY (Name)

LOCATION OF HOOD

TYPE OF HOOD

☐ Standard ☐ Auxiliary Air supply ☐ Other (specify)

GENERAL TOXICITY RATING OF MATERIAL USED IN HOOD

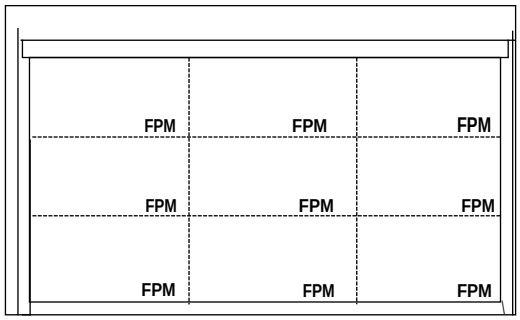
☐ Low (STEL ≥ 1, 00 0 PPM) ☐ Medium ☐ High (STEL < 1 0 PPM)

CROSS SECTIONAL AREA AT FACE

Height: _____ feet x Width: _____ feet = _____ feet^2

AIR VELOCITY READINGS

(Readings are to be taken in the center at each of the prescribed frontal grids.)

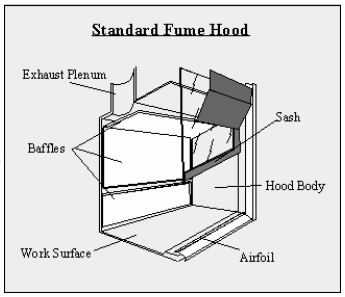


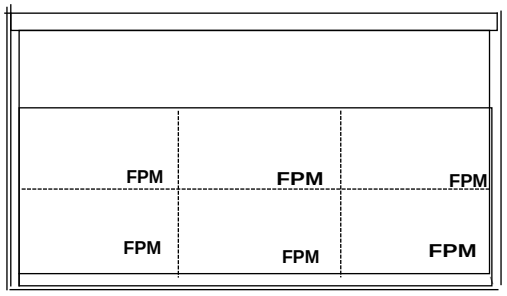
Exhaust on, sash fully raised.

(Exhaust flow value equal to zero CFPM)

$$\frac{\text{FPM} + \text{FPM}_1 + \text{FPM}_2 + \ldots\ldots \text{FPM}}{9} = \text{FPM average.}$$

Average value _____ FPM.





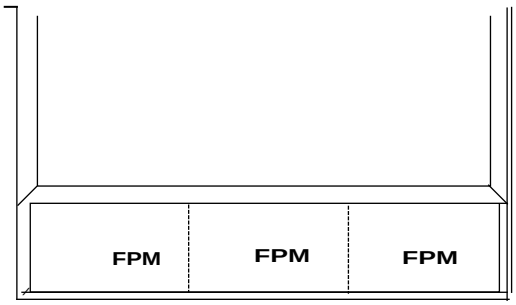
Exhaust on, sash raised 18 inches.

(Readings may not vary more than ± 10 FPM from average value.)

Average value _____ FPM.

(Value should be 80- 100 FPM.)

Exhaust flow value _____ CFPM.



Exhaust on, sash 6 inches above work surface.

(Readings shall be at least 2 but not more than 3 times the face velocity when sash was fully raised)

Average value _____ FPM.

Exhaust flow value _____ CFPM

EXHAUST READING WITH SASH CLOSED

Exhaust flow value _____ CFPM.

TITANIUM TETRACHLORIDE INDICATION OF FLOW PATTERNS AT HOOD FACE.

☐ Satisfactory flow patterns evident.

☐ Unsatisfactory *(describe):*

_____

_____

_____

ONE-MINUTE SMOKE BOMB DISCHARGE

☐ Effective smoke removal with sash fully raised.

☐ Effective smoke removal with sash 6 inches above work surface.

☐ Effective smoke removal with sash closed.

☐ If unsatisfactory, describe: _____

_____

APPROVAL

SIGNATURE DATE

☐ This hood is found to be acceptable for use with materials of the general toxicity rating as specified above.

☐ This hood has been found UNACCEPTABLE.

HOW TO MEASURE FUME HOOD FACE VELOCITY:
STANDARDIZED FOR REE INCLUDING THE SHEM
AND ENGINEERING COMMUNITIES

Note: The sole purpose of this document is for it to serve as a user-friendly and quick-reference guide on how to measure the airflow of a chemical fume hood. It is not meant to replace information currently contained in ARS Manual 230. Always refer to M230, the American National Standards for Laboratory Ventilation (ANSI/AIHA Z9.5-1992), the ASHRAE Guideline: Method of Testing Performance of Laboratory Fume Hoods (ANSI/ASHRAE 110-1995), the ASHRAE 1995 HVAC Applications Handbook, Fire Protection for Laboratories Using Chemicals (NFPA 45), Laboratory Fume Hoods Recommended Practices (SEFA 1.2-1996) and 29 CFR 1910.1000 for detailed specific information.

1. **To measure chemical fume hood face velocities use a calibrated Thermal Anemometer, Velometer, or Swinging Vane Anemometer.**
2. **It is recommended that you mount the measuring equipment to a sturdy, freestanding device such as a ring stand to allow for steady & accurate airflow measurement (this helps to negate the possibility of generating invalid data due to unsteady hand-held equipment).**
3. **Close all doors and windows and minimize foot traffic in the work area.**
4. **While the fume hood is running measure the Cross-Draft Velocity (airflow perpendicular to fumehood intake) six inches in front of the mid-point of the hood. This reading should not exceed 20 FPM.**
5. **Fully open the sash.**
6. **Visually check that air is flowing into the fumehood and baffles using a smoke-generating device (titanium tetrachloride smoke sticks, sulfuric acid mist tubes, or dry ice). No smoke should escape from the hood.**
7. **Divide the wide opening into nine equally spaced sectors (3 columns/3 rows). Refer to USDA S&E Form 283.**
8. **Move the measuring device to the center of each of the 9 sectors and record the face velocity.**
9. **No face velocity measurement on the grid should be less than 60 FPM.**
10. **Average the 9 face velocity measurements—this average should be 80-120 FPM.**
11. **Lower the sash to 18 inches above the work surface.**
12. **Divide the opening into six equally spaced sectors (3 columns/2 rows). Refer to Form 283.**
13. **Move the measuring device to the center of the 6 sectors and record the face velocity.**
14. **Average the 6 face velocity measurements—this average should be 100-150 FPM.**
15. **Lower the sash to 6 inches above work surface.**
16. **Divide this opening into three equally spaced sectors (3 columns/1 rows). Refer to Form 283.**
17. **Move the measuring device to the center of each of the 3 sectors and record the face velocity.**
18. **Average the 3 face velocity measurements—this average should be 160-300 FPM.**
19. **To minimize turbulence and reverse flow the Average Face Velocity should not exceed 150 FPM at the working sash level (18 inches).**
20. **The Cross-Draft Velocity should not exceed 20% of the Average Face Velocity.**
21. **Adjust the fumehood baffles or HVAC system to ensure items 19 & 20.**
22. **Record the measurements and label the fumehood with the measurement data (Average Face Velocity, Sash Height, Date, & Inspector).**

The following three conditions must be met in order for a hood to pass:

1. **The average face velocity at a sash opening of 18 inches must be a minimum of 100 FPM.**
2. **The average face velocity at a sash opening of 6 inches cannot exceed 300 FPM.**
3. **At any sash height smoke cannot escape from the hood back into the room.**